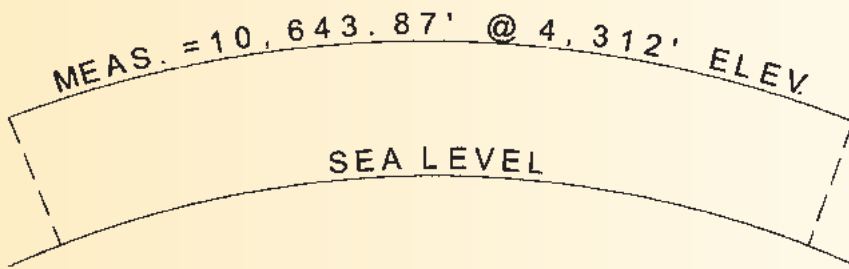




This month's challenges require you to find a sea level distance and to calculate/design a highway-railroad crossing. Solutions can be found on our website at www.profsurv.com.



Problem 43

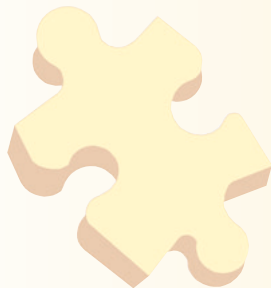
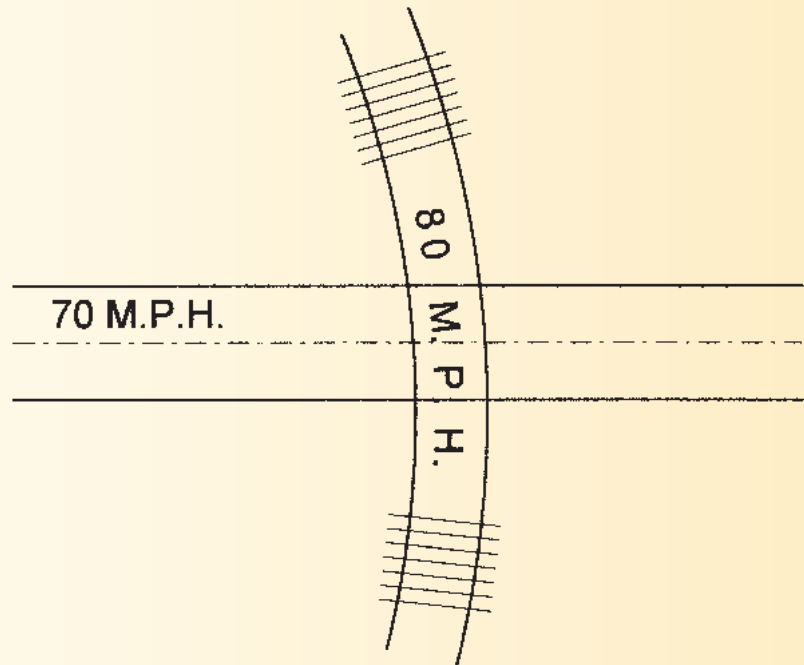


A line is measured at an average elevation of 4312' above sea level. What is the equivalent sea level distance?

When do elevation differences become significant, say $\pm 0.005'$?

Problem 44

A flat, straight 70 m.p.h. highway needs to cross an 80 m.p.h. railroad radial to a 1.2° curve where the inner rail is already 3.00' above the elevation of the highway. Given that superelevation on the railroad track is equal to e (inches) = $0.000685v^2D$, (where v = m.p.h., D = degree of curve) and a comfortable rate of change of grade is $r = 15,000/v^2$, (where v = m.p.h.), calculate a highway design to cross the tracks. (Use 5.00' for the distance between rails.)



The problems for this column are contributed by retired California surveyor Dave Lindell, LS.